INTERNATIONAL CONFERENCES AND THE BRITISH ASSOCIATION.

THE circumstances under which the International Conference on Terrestrial Magnetism and Atmospheric Electricity met at Bristol, and its relations to the British Association, were fully described in the address of the President which we have already published. The success of the Conference leads to the hope that similar arrangements may be made in future with regard to other international reunions which may be held in this country.

The number of such gatherings is increasing, but, useful as they undoubtedly are, they make serious inroads on the summer vacation; they diminish the few short weeks which, when the necessary holiday has been taken, can be devoted either to research or to preparation for the work of the next session; and lastly they necessarily compete with, and injuriously affect, each other.

Thus it is unquestionable that the fact that physiologists foregathered in Cambridge shortly before the meeting of the British Association was one of the causes why at Bristol physiologists were conspicuous by their absence. Last year the number of British geologists who visited Canada was relatively small, as they could not be in the Caucasus and on the shores of the Pacific at the same time.

It may be impossible to prevent such meetings from interfering when they are held in different countries and when two nations are the hosts, but everything that is possible should be done to prevent it when the gatherings take place in the same summer and in the same country. Steps have recently been taken in this direction. Conferences of zoologists and physiologists were held simultaneously in Cambridge, and the Conference on Terrestrial Magnetism was affiliated to the British Association. This latter plan could not be adopted if the number of persons attending an International Conference was so large that, if the Conference were held simultaneously with the meeting of the Association, it would overtax the receptive capacity of a great town. Such cases are comparatively rare, and in others the aid of the Association is so valuable, that it may be hoped that the precedent now set will be followed frequently.

The conditions of a successful International Conference are interesting and important questions to discuss, an adequate attendance of British and foreign scientific men, and well arranged opportunities for social intercourse. Taking the first two for granted, and dealing therefore only with the last, it is well known that an elaborate scheme of entertainments and excursions is most generously and even lavishly provided by the locality in which the British Association meets. These were, and probably always would be, thrown open to members of an International Conference meeting together with and recognised by the Association. If the number of those attending the Conference was sufficiently large to justify the wish to have some special entertainments—it may be a dinner or an excursion—reserved for them alone, this could no doubt be arranged at a cost to the promoters of the Conference much less than that involved in the holding of an independent meeting. The British Association thus possesses ready-made machinery for the reception and entertainment of foreigners, which would have to be created anew for each independent Conference. On the other hand, no small part of the elaborate preparations for the meeting of the Association is now too often devoted to the entertainment of persons whose interest in science is little more than a hardy annual which blossoms in August or September, and requires a stimulating treatment of cheap excursions to bring it to maturity. No harm would be done to the Association, and good would result in many ways if these were in part replaced by distinguished foreign visitors and their English *confrères*. The authorities of the Association have shown a praiseworthy readiness to vary their arrangements so as to grapple with new conditions. Though nominally a department of Section A, and working most harmoniously with the officers of that Section, the International Magnetic Conference was practically at liberty to manage its own affairs, and was in no way hampered by red-tape. The Permanent Committee, appointed not by the Association, but by the International Meteorological Conference at Paris in 1896, was added *en bloc* to the Committee of Section A, and was allowed unfettered control of the Magnetic Department of that Section.

If the authorities of the Association are thus wisely liberal in future, there is no reason why at least the smaller International Conferences which take place in this country should not meet in alliance with the British Association.

If a Section can for one year coexist with an almost independent department, there is no reason why similar temporary arrangements should not be adopted on a more extensive scale, should occasion so require. The promoters of the Conference would be saved a great deal of trouble and even of expense. The cost to the Association and to the locality would be no greater than it is now. The persons entertained would be genuine scientific workers. The meetings of the Association would gain in interest and prestige, while at most of the places where the Association meets there would be no difficulty in providing space for several additional Sections if such subdivision were necessary.

The experiment which has been tried this year on a small scale was a complete success, and it is desirable that those who may have the management of International Congresses in future should be fully aware of the readiness which the Council of the British Association has displayed to make the great organisation which it controls as useful as possible. They have much to give, and on this occasion they gave it freely; while, on the other hand, the Association gained both in the interest of its proceedings, and in the usefulness to science which is the object of its existence.

NOTES.

THE seventeenth Congress of the Sanitary Institute was opened at Birmingham on Tuesday, and will continue in session during the remainder of this week. On Tuesday afternoon Sir Joseph Fayrer, Bart., the President of the Congress, delivered an address, in which he surveyed the progress of preventive medicine during recent times; and in the evening the Lord Mayor opened a great exhibition of appliances, machinery, food products, and the like, which is the usual feature of the Congress, and lasts a month. On Wednesday municipal representatives, medical officers of health, sanitary engineers, sanitary inspectors, and ladies held conferences and discussed papers. Thursday and Friday are to be devoted to sectional work, and there are two important lectures, one to the Congress, and one to the general public. Among the topics to be discussed are the relations of medical officers to vaccinal legislation, the milk supply, water analysis, bacteria and infectious disease, hygiene in dress, and the decrease in the birth-rate.

THE death is announced at Paris of M. Gabriel de Mortillet, the eminent anthropologist.

THE annual exhibition of the Royal Photographic Society was inaugurated by a soirée held on Saturday last, September 24.

AT the meeting of the Entomological Society of London, on October 5, a paper by Mr. F. Merrifield, "On colouring of pupæ of *P. machaon* and *P. napi* caused by exposing the pupating larvæ to coloured surroundings," will be read; and also one by Mr. G. H. Verrall, "On Syrphidæ collected near Aden by Colonel J. W. Yerbury."

RECENT researches by Surgeon-Major Ronald Ross have shown that the mosquito may be the host of parasites of the type of that which causes human malaria. Ross has distinctly proved that malaria can be acquired by the bite of a mosquito, and the results of his observations have a direct bearing on the propagation of the disease in man. Dr. P. Manson describes the investigations in a paper in the *British Medical Journal*, and sums them up as follows:—The observations tend to the conclusion that the malaria parasite is for the most part a parasite of insects; that it is only an accidental and occasional visitor to man; that not all mosquitos are capable of subserving it; that particular species of malaria parasites demand particular species of mosquitos; that in this circumstance we have at least a partial explanation of the apparent vagaries of the distribution of the varieties of malaria. When the whole story has been completed, as it surely will be at no distant date, in virtue of the new knowledge thus acquired, we shall be able to indicate a prophylaxis for malaria of a practical character, and one which may enable the European to live in climates now rendered deadly by this pest.

A VALUABLE report upon the various attempts which have been made to bring China grass (obtained from *Boehmeria nivea*) and Ramie or Rhea (obtained from *B. tenacissima*) into use for manufacturing purposes is contained in the *Kew Bulletin* for September. The report describes machines which have been devised to deal with the grass, and indicates the merits and defects of the most important of them. It will be seen from the following summary of the Kew report that the problem has not yet been satisfactorily solved:—"Notwithstanding all the expenditure of mechanical skill and inventive ability, the conclusion cannot be evaded that we are still as far off as ever from being able to place upon the market a finished product which will effectually compete with silk, flax, and the better qualities of cotton. The plants can be grown with the greatest ease. But when the problem of treatment is solved, the supply of the raw material will be limited to warm countries. The cultivation of China grass in temperate regions will never be able to compete successfully with that of Ramie (or perhaps of China grass) in the tropics. It is known that when ribbons can be produced sufficiently cheaply, these can be degummed and turned into filasse at a small cost. The whole question then still turns, as in 1888, on the production of ribbons. We are still waiting for a decorticator which will not merely turn out ribbons fit for further manufacturing processes—that has been accomplished—but will turn out, say, half a ton a day at a small cost. Till this has been found, the planter cannot profitably deal with his crop, and the degumming processes now almost entirely dependent on hand-cleaned fibre from China are paralysed for want of a supply which will allow the finished product to compete with other fibres."

NEWS has been received by the *Times* that the *Antarctic*, with the Swedish Arctic Expedition under Dr. A. G. Nathorst, has returned to Tromsö, after a successful cruise to the seas and islands around Spitsbergen; and the following notes on the results of the expedition are published:—The *Antarctic* left Tromsö on June 8, and proceeded to Bear Island, which was reached on the 11th; a week was spent there. The whole island was surveyed, and a map on the scale of 1 : 50,000 was drawn by Lieut. Kjellstrov and Dr. Hamberg. After surveying and mapping Bell Sound, on the west of Spitsbergen, and visiting some points of interest in Ice Sound, the expedition proceeded westwards, and did some hydrographical work as far as the margin of the Greenland ice-pack (78° 1′ N. lat., 4° 9′ W. long.). The ship was then turned to the south and east of Spitsbergen, and reached King Charles Land, which was completely mapped on the scale of 1 : 100,000 and surveyed. From there the *Antarctic* proceeded to White Island, which was circumnavigated; the expedition landed at the only two places where landing is possible, and the geology of the island was ascertained. This island is completely covered by an ice-cap, which is broken off at the sea shore, ending in a perpendicular ice-wall, just as is found on the Antarctic Continent, though in miniature. Great table-formed icebergs are given off from this ice-sheet. From White Island, which is larger than indicated on the maps, the *Antarctic* made its way through alternating heavy ice and open water to Charles XII. Island, whence the expedition proceeded northwards and reached 81° 14′ N. lat. The expedition then passed north of the Seven Islands and proceeded to Treuenberg Bay, Grey Hook, and Danes Island, from which they steered southwards along the western coast of Spitsbergen. When the *Antarctic* reached the south end of Prince Charles Foreland the circumnavigation of the whole of Spitsbergen, with the surrounding islands, was completed. The scientific work of the expedition has been most successful; they have brought back large geological, botanical, and zoological collections. The geology, botany, and zoology of King Charles Land are now completely known, and there are evident important connections between the geology of Spitsbergen and that of Franz Josef Land.

THERE are a great number of curious superstitions as to the time of day when a dying person is most likely to draw his last breath, and the tide, the moon, and the wind have all been supposed to have some share in the matter. According to the *British Medical Journal*, Raseri, who has analysed 25,474 cases of death, and 36,515 of birth, where the exact time of day was noted, finds that the maximum number of deaths occur in the early afternoon (2–7 p.m.), and the minimum in the last hours before midnight, while the maximum number of births occur in the early hours of the morning, and the minimum in the early hours of the afternoon. As regards the cause of this, he points out that the hours of the maximum number of deaths are precisely those when the pulse rate and temperature are at their highest in health, and when there is a febrile exacerbation in illness.

THE Report of the Chief of the United States Weather Bureau upon meteorological observations made during the year 1896–97 has just been received. It consists of a volume containing more than four hundred pages, with nearly one hundred large charts and plates. The very valuable work carried on by the Weather Bureau is too well known to meteorologists to need commendation here. The vote for the service during the fiscal year 1896–97 was 883,772 dollars; but, remembering how very considerably the work has extended during the past few years, we are surprised to learn that this grant is 109,748 dollars less than that made in 1883. In the past fifteen years the number of voluntary observers has increased from 300 to about 3000, and the number of stations on the sea-coasts and the Great Lakes, where storm warnings are displayed for the benefit of mariners, has increased from 41 to 253. These storm warnings have proved of very great service. At each of the 253 stations where the signals are displayed, telegraphic messages, giving the situation, intensity and probable movement of the storm are distributed to the masters of vessels within an hour after the information has been dictated by the forecast official at headquarters. It is estimated by shipowners that one hurricane sweeping the Atlantic seaboard would cause damage to floating craft of more than 600,000*l*. During the past three years ten or more of these destructive storms have visited the coast-line of the United States, but in every case the danger warnings were displayed long in advance of the storm, and no marine disasters of importance occurred. These facts alone justify the appeal of the Chief of the Weather Bureau for an increased grant. His estimate of the money needed to meet the legitimate requests of the agricultural, marine, commercial, and manufacturing interests of the States is 1,044,050 dollars, being an increase of 160,348 dollars. The present report furnishes abundant evidence that whatever money is voted will be used in making the Bureau of service to the people of the States, and of assistance to the progress of meteorological science. In addition to the usual report upon the administrative work, the volume contains an account of the climatology of the year, and papers upon the rainfall of the United States and the floods of the Mississippi Valley, both of which have already been noticed in NATURE.

THE September number of *Annalen der Hydrographie und maritimen Meteorologie* contains two papers of more than usual interest: (1) Yearly isotherms and isabnormals of sea-surface temperature, by Dr. W. Köppen. The author has calculated the yearly isotherms from the best available sources, including those of the Deutsche Seewarte and the Meteorological Office, and in addition to the usual methods of showing simply the warm and cold currents, he has indicated the districts where the surface water is more than 2° C. above or below the temperature due to geographical position. (2) Contribution to the knowledge of wind conditions on the sailing routes between the equator and Cape Horn, by Dr. H. König. The data used are principally those collected for the sailing directions issued by the Seewarte. In addition to various tables showing the distribution of wind directions for months and seasons, and referring to different districts, the author has shown graphically for each month and each 5°-square the percentages of the three most prevalent wind directions, with numbers showing their mean force, the calms, and the total number of observations from which the results are deduced. Both the above discussions are accompanied by interesting explanatory remarks.

TELEPHONIC communication has been established between a number of farms in Australia by means of wire fences. The *Australian Agriculturist* publishes a note from a correspondent writing from a station near Cobar, stating that it was easy to converse with friends at a station eight miles distant with instruments connected on the wire fences, and the same kind of communication was established over a distance of thirteen miles. A large number of stations are connected in this way, and the system if widely adopted will do much to relieve the monotony of back country life.

PROF. ZICKLER, of Brünn, has (says the *Electrical Review*) conducted an elaborate series of experiments, which show that a telegraphic instrument can be actuated at considerable distances by a beam of ultra-violet light. He employs a powerful arc lamp as his transmitter, using a screen of glass to produce intermittent flashes of the ultra-violet beam, which embody themselves as dot and dash signals on his receiver. The receiver is an air-gap in a circuit containing an induction coil regulated to an electromotive force just below the sparking point at the air-gap. As Hertz long ago has shown, a beam of ultra-violet light falling on the kathode of a strained air-gap, near its breaking-down point, will immediately provoke a discharge. Zickler started by producing this effect over a distance of 2 m. Then, by improving the shape and material of his electrodes and enclosing them in a chamber of compressed air, he was able to increase this distance to 200 m. This is a remarkable result, and it is extremely interesting to physicists to learn that the short and easily absorbed ultra-violet light can influence a spark discharge at so great a distance.

THE attention of several physicists has been of late turned to determinations of the thermal conductivity of rocks. A large number of experimental results, chiefly statistical, and obtained by using the "Wall method," are detailed by Messrs. B. O. Pierce and R. W. Willson in the *Proceedings* of the American Academy of Arts and Sciences; while Dr. Francesco Morano has been engaged in determining the internal and external conductivity of the rocks of the Roman Campagna and the corresponding fluctuations of temperature of the soil (*Atti dei Lincei*, vii.). While these experiments lead to purely numerical results, Dr. Lees, of Manchester, in a paper read before the British Association, has succeeded in establishing the fact that pressure produces a marked increase of conductivity in the less closely-grained rocks, especially sandstone.

THE disposal of the town refuse of Naples has led to a lengthy discussion at the meetings of the Reale Istituto d'Incoraggiamento di Napoli, and the publication of a number of papers in their large annual volume of *Atti*. The subject is introduced by Prof. Paolo Boubée, who seems to rather favour treatment by the Arnold-Le Blanc system, or the use of destructors; though it would appear that the refuse of the Neapolitan streets is too wet, and also too poor in carbon, to burn without the additional consumption of coal. At present the street sweepings are taken and deposited some distance outside the city, and the accumulations ultimately used as manure; but the effluvia arising from so large a mass of putrefying matter have become prejudicial to health. It is suggested that the problem might be best solved by a series of experiments on the different alternative methods of disposal; and even the clumsy and wasteful plan of dumping the refuse at sea seems considered deserving of a trial.

AN "Improved form of Hydrometer" by means of which the effect of capillarity is eliminated, is proposed by the Rev. H. O'Toole of Blackrock College, writing in the *Scientific Proceedings* of the Royal Dublin Society. It is similar in principle to Nicholson's hydrometer, but, instead of one bulb, it has two connected by a narrow stem of the same material and sectional area as that which supports the weight. It is first loaded till the lower bulb is immersed, and then loaded till both bulbs are immersed. The additional weights put in at the second observation represent exactly the weight of a quantity of liquid equal in volume to the upper bulb between the two points of immersion.

"A CONTRIBUTION to the Study of Individual Variation in the Wings of Lepidoptera" is given by Mr. William L. W. Field in the *Proceedings* of the American Academy of Arts and Sciences, xxxiii. 21. The paper gives the results of an attempt to find in a particular species answers to the following questions: (1) Is a part developed in any given species in an extraordinary manner as compared with the development of the corresponding part in other allied species, more variable than parts which exhibit less specific peculiarity? (2) Which sex is the more variable? The species chosen is the moth *Thereus abbotii*, in which the outer margins of the primaries are excessively irregular and extraordinarily long as compared with the other dimensions of the wings. Measurements were made, for a large number of specimens, of the length of the sinuous margin, the length and breadth of the wing, and the chord of the margin; and from these the author concludes that, in the moth in question, the most aberrant dimension of the fore wing is likewise the most variable, in accordance with Darwin's law. The females show, in general, a greater degree of variability than the males; but in the one markedly aberrant feature under discussion, their variability is less than that of the males. With reference to the first conclusion, the propriety may be questioned of instituting comparisons between the lengths of the jagged contour of the outer margin and the straight lines which determine the actual dimensions of the wings. Mr. Field might with advantage make observations on some other insect in which the length or breadth of the wing was the aberrant feature.

In a long article (to be continued) contributed to the *Zoologist*, Mr. W. L. Distant reviews the facts and theories as to assimilative coloration, and propounds some new views. He remarks in the course of his paper: "It seems possible that assimilative coloration may have been a first and very general consequent in animal development; that such a view is suggested by many facts; and that the subsequent protective resemblance acquired by numerous living creatures through the process of natural selection, when life had advanced to the competitive stage, is far too frequently used as an explanation for whole series of uniform phenomena in coloration, which have probably survived unaltered from remote antiquity, and which by their very essence were outside the law of natural selection, or unaltered survived as the 'fittest.'"

The *Biologisches Centralblatt* (No. 17) contains a paper by Hartvig Huitfeldt-Kaas on the Plankton of the fresh-water lakes of Norway. The author follows the methods of Apstein, and finds that in general the Plankton is richer in shallow waters than in deep, except in regions where the rainfall is excessive, *i.e.* where the lake is subject to sudden large additions to the volume of water. The seasonal variations in the quantity of Plankton in a number of lakes are exhibited graphically.

The *National Geographic Magazine* for August contains a paper by Mr. W. J. McGee on Papagueria, the land of the Papago or Papaf Indians, an arid region lying beyond the Sierra Madre, partly in Mexico and partly in Arizona; and covering an area of about 50,000 square miles. The study of the natives presents some remarkable features; their whole existence may be said to be occupied with the search for water, and the tribe is distinguished by exceptional force and stability of character. More than three centuries of contact with white races has produced little or no effect upon them.

The issue of the Belgian *Moniteur International* of August 7 last is largely devoted to the new *Société Anonyme d'Études et d'Éditions Géographiques Élisée Reclus*. The laws and constitution of the Society are printed in full, and there are special articles by M. Reclus and others. The new Society has for its object the furthering of geographical study and exploration in all directions, by means of co-operation with existing foreign institutions and with foreign branches of the Society itself; and special attention is to be given to the working-up and publishing of geographical information relating to particular regions, in a form adapted for economic and commercial purposes.

The number of the *Naturwissenschaftliche Wochenschrift* for September 11 contains an excellent popular account of the Adschidarja, the gulf connected with the Caspian Sea by the narrow strait of Karabugas, and often known by the latter name. A current flows from the Caspian to the Adschidarja, varying in speed at different seasons, but never changing its direction, and the waters of the gulf are intensely salt—28 per cent.—compared with about 1·4 per cent. in the Caspian. Actual measurements made at different dates since its discovery in 1836 show that the Adschidarja and the Karabugas are being rapidly filled up, and the fossil remains show that for a long period the waters of the former have been growing steadily salter. The description of the chemical deposits, both organic and inorganic, is of extreme interest, the latter specially so in relation to the formation of oil-bearing strata.

Dr. H. Carrington Bolton has discovered in a cavern at Lake Minnewaska, New York, a grotto in which are reproduced on a small scale many of the beautiful phenomena seen at the celebrated Blue Grotto of the island of Capri. The lake is situated on the Shawangunk range of mountains at an elevation of about 1700 feet; it lies in a basin, excavated in glacial times, about half a mile long and less than a quarter in width, and of a depth reaching seventy feet. The rock on all sides is a white quartzite, which rests upon shale, but no outcrop of the latter is visible at the lake. The water varies in colour from Nile green through turquoise blue and sky blue to deep indigo blue, and in all these shades exhibits the silvery appearance, when agitated, characteristic of the grotto at Capri. A body immersed in the water has a beautiful silvery sheen, similar to the reflection of moonlight. The water has these colours at all hours, but they are strongest when the sun is in the zenith; late in the afternoon the slanting rays of the sun enter the opening and light up the cavern, greatly diminishing the optical effects.

The last two issues (vol. i. Nos. 9 and 10) of the Records of the Botanical Survey of India comprise a contribution to the Botany of the Chitral Relief Expedition, 1895, by Mr. J. F. Duthie; and a Botanical Tour in Chamba and Kangra, by Mr. G. A. Gammie.

A valuable list of the Freshwater Algæ of Queensland is issued by the Department of Agriculture, Brisbane (*Botany Bulletin*, No. 15). The compiler, Mr. F. M. Bailey, has incorporated with his own observations those of the European algologists, Askenasy, Moebius, Nordstedt, Schmidle, and Borge, who have worked at the algology of Australia.

The Geological Survey of Queensland (Department of Mines) has issued a list of Additions to the Fossil Flora of Queensland, compiled by Mr. John Shirley. The species described are mainly from the Ipswich formation, Trias-Jura system, and are mostly Gymnosperms and Pteridophyta, with a few Dicotyledones. The list is accompanied by twenty-five plates.

It is recorded in the *Kew Bulletin of Miscellaneous Information* (No. 140) that the Queen's Cottage Grounds (between 37 and 38 acres) have now been formally added to the precincts of the Royal Gardens; but that public access to them cannot be given until provision for their maintenance and supervision has been made in the estimates for the next financial year. It is intended to preserve the grounds as far as possible in their present condition.

The numbers of the *Journal of Applied Microscopy* for June and July, published by the optical firm of Bausch and Lomb, Rochester, New York, contain a number of very useful articles on microscopical technique, and on the structure of the microscope, as well as some which are more purely biological. The *Journal* should be in the hands of all microscopists.

The *Biologisches Centralblatt* continues to publish useful epitomes of recent research in various branches of biological science. In the number for August 15 we find a paper, by Bernhard Jacobi, on the results of the newest researches on the locality and conditions of the formation of proteids in green plants, with a bibliography appended. The same number contains an article, by J. E. W. Ihle, on the phylogeny and systematic position of the Pentopodæ.

The illustration of lectures and lessons by lantern slides is now so widely used, that attention may profitably be called to the supplementary list of slides just published by Messrs. Newton and Co. Among the lantern slides of interest to teachers of science, we notice in this list a set of 111 bacteriological slides, reproduced from original negatives by Dr. Spitta; numerous recent astronomical photographs, including pictures of the Indian eclipse; views taken by Prof. Crookshank during the meeting of the British Association in Toronto last year; geological formations in the neighbourhood of Barmouth; and fifty-five pictures of English birds, photographed from the well-mounted specimens in the Natural History Museum. In addition to the titles of slides, the list contains descriptions of new lanterns and lantern accessories of service in science demonstrations.

The additions to the Zoological Society's Gardens during the past week include a Chimpanzee (*Anthropopithecus troglodytes*, ♂) from West Africa, presented by Mr. Claude E. Bird; a Rhesus Monkey (*Macacus rhesus*, ♀) from India, presented by Mr. C. Ganz: a Brown Capuchin (*Cebus fatuellus*) from Guiana, presented by Miss May Hill; two White-throated Capuchins (*Cebus hypoleucus*) from South America, presented by Mrs. C. E. Cregan; three Black-eared Marmosets (*Hapale penicillata*) from South-east Brazil, presented by Mrs. Dal Young; a Common Chameleon (*Chamæleon vulgaris*) from North Africa, presented by Mr. W. E. Raynes-Cole; a Red-vented Bulbul (*Pycnonotus hæmorrhous*) from India, deposited.

OUR ASTRONOMICAL COLUMN.

Astronomical Occurrences in October:—

October 2. 10h. 27m. to 11h. 35m. Occultation of 47 Arietis (mag. 5·9) by the moon.
4. Tempel's comet (1867 II.) due at perihelion.
5. 9h. 46m. Minimum of Algol (β Persei).
5. 16h. 6m. to 17h. 27m. Occultation of 132 Tauri (mag. 5·1) by the moon.
7. Saturn. Outer minor axis of the outer ring = 16″·09.
7. 17h. 0m. Mars in conjunction with the moon (♂ 1° 25′ N.).
8. 6h. 35m. Minimum of Algol (β Persei).
13. 11h. 0m. Jupiter in conjunction with the sun.
15. Venus. Portion of illuminated disc = 0·521. Diameter 34″·0.
15. Mars. Portion of illuminated disc = 0·880. Diameter 8″·0.
16. 4h. 0m. Mercury 2′ S. of Jupiter.
18–20. Meteoric shower from Orion (radiant 91° + 15°).
20. Perrine-Chofardet's new comet due at perihelion.
22. 3h. 44m. to 4h. 57m. Occultation of π Capricorni (mag. 5·2) by the moon.
22. 5h. 5m. to 5h. 51m. Occultation of ρ Capricorni (mag. 5·0) by the moon.
23. 5h. 13m. to 6h. 13m. Occultation of 18 Aquarii (mag. 5·4) by the moon.
24. Uranus 54′ S. of β Scorpii.
27. 5h. 0m. Venus at greatest brilliancy.
29. 13h. 21m. to 14h. 10m. Occultation of μ Arietis (mag. 5·8) by the moon.

The Planet between the Earth and Mars.—Herr G. Witt, of the Urania Observatory, Berlin, is to be congratulated on the fortunate discovery he has made while searching photographically for minor planets. On August 14 last he found on the plate he had exposed, in addition to the trail of the minor planet he was hoping to catch, a second trail which indicated the presence of another of these small bodies moving round the sun with a more than usual velocity. Herr Witt was not content, however, to let the matter rest thus, so he undertook a series of eye observations and measurements which are necessary for the determination of the elements of the body in question. Herr Berberich undertook the task of investigating its motion from these observations, and the result, as far as is known, is surprisingly interesting. Instead of the object being a new or a previously observed member of that system of bodies which travels round the sun between Mars and Jupiter, it proves to be quite an exception, its orbit lying *within* that of Mars; in other words, it travels in a path which is nearer to the earth than that of Mars. It completes its revolution in a period of about 600 days; that is, roughly, 80 days less than Mars takes: both the eccentricity and inclination of the orbit are considerable. This small body thus becomes our nearest neighbour after the moon, and, although small, will shine when closest to us as a star of the sixth magnitude. No doubt the discovery of this new planet will incite afresh observers of these small bodies; and who will say that this new object is the only member of its kind that performs its revolution round the sun in an orbit between the earth and Mars?

Photograph of the Chromosphere.—In the *Astrophysical Journal* for August there is reproduced one of the photographs taken by Prof. Naegamvala during the recent eclipse of the sun in January last. Prof. Naegamvala, it will be remembered, was stationed at Jeur, and although his chief instrument (a six-inch Taylor Cooke triplet and two objective prisms of 45°) arrived from the makers as late as January 11, he was very fortunate in being able to adjust it as well as he did in the small amount of time he had at his disposal. The advantage of the prismatic camera over an ordinary slit spectroscope has during the late eclipse been abundantly proved, for one is easily able to differentiate at a glance between the spectra of the corona, the chromosphere and the prominences. There are, however, several points in photographs taken during an eclipse with such instruments which must be carefully considered, and which, when overlooked, are liable to lead to errors. An oversight of this kind occurs in the text describing the photograph referred to above. The writer states: "Perhaps the most interesting feature of the photograph is the prominence shown in two lines between H and Hδ, but invisible in H and K and the hydrogen lines."

A glance at the photograph tells us that the prominence is recorded in both the H and K light, but the peculiar position of the prominence in the spectrum is due to the fact that the two "lines" are the images of the upper portion of a prominence on the chromosphere obscured by the dark moon on the side opposite to that represented by the arcs. This same prominence is depicted on most of the negatives that were secured at Viziadrug, and is recorded not only in the H and K lines, but in the hydrogen and other lines.

Observations of Jupiter during the Opposition 1898.—Sig. J. Comas Solá, observing at the Observatory of Català with an equatorial of 22 cm. aperture, made some very interesting observations of the surface markings on Jupiter during the period extending from January 18 to June 12 during the present year (*Astr. Nachr.*, 3519). The general aspect of the surface did not offer evidence of very great change, but rather indicated that the planet was in a state of relative calm. More especially was this the case with the northern equatorial belt, which last year was very large, double and perhaps triple, but recently has been observed to be very simple, showing a uniform structure of a deep ruddy colour. The equatorial zone was found to be of an intense reddish yellow or yellowish orange colour, and was especially rich in details. In addition to the oblique grey markings usually seen, the whole zone appeared flaky, and when the definition was good this was found to be made up of large and small dark round spots. The south equatorial belt did not offer any new markings, but appeared in its normal condition. The red spot, according to Sig. Solá, was always very pale and grey, but in spite of its feebleness he could see the whole of its elliptic contour. The eastern portion always appeared darker than the rest, and sometimes a small dark spot could be seen in this position. From three transits of the eastern portion of this spot in April, May and June, the mean Jovian longitude was found to be 36°·6 for May 23. In the map showing the planisphere of this planet, which accompanies the article, the reader will gather a good general idea of the positions and shape of the markings which were seen by this observer.

Periodic Comets.—In the *Bulletin Astronomique* for September there is a most interesting article, by M. Schulhof, concerning periodic comets and the present state of theories connected with them. The article covers no less than forty-one pages of the *Bulletin*, so we cannot do more than give a very brief outline of its contents. M. Schulhof restricts his remarks simply to the movements of the comets and their accompanying perturbations, but does not touch on their chemical or physical characteristics. After a brief summary of the general ideas concerning the motions of each of these comets, and the part taken by the several investigators who have worked out the orbits, he draws attention to the great similarity between groups of comets, caused, as he mentions, by the presence of our planets exerting their influence as these bodies approach our system. The origin of comets and their relation to meteor swarms are further discussed, also the views of Schiaparelli, Faye, and Tisserand. In concluding, M. Schulhof makes mention of the difficulty connected with a complete reduction of the observations of a comet of short period, with which all computers are familiar, pointing out that the perturbatory actions of all the planets except Neptune have to be taken into account.